Community pharmacy personnel interventions for smoking cessation (Review)

Sinclair HK, Bond CM, Stead LF

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Community pharmacy personnel interventions for smoking cessation

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ABSTRACT

Background

Smoking cessation is a potentially appropriate role for community pharmacists because they are encouraged to advise on the correct use of nicotine replacement therapy (NRT) products and to provide behavioural support to aid smoking cessation.

Objectives

This review assessed the effectiveness of interventions by community pharmacy personnel to assist clients to stop smoking.

Search strategy

A search was made of the Cochrane Tobacco Addiction Group database for smoking cessation studies conducted in the community pharmacy setting, using the search terms pharmacist* or pharmacy or pharmacies. Date of the most recent search: October 2007.

Selection criteria

Randomized trials which compared interventions by community pharmacy personnel to promote smoking cessation amongst their clients who were smokers compared to usual pharmacy support or any less intensive programme. The main outcome measure was smoking cessation rates at six months or more after the start of the intervention.

Data collection and analysis

Data were extracted by one author and checked by the second, noting: the country of the trial, details of participant community pharmacies, method of subject recruitment, smoking behaviour and characteristics of participants on recruitment, method of randomization, description of the intervention and of any pharmacy personnel training, and the outcome measures.

Methodological quality was assessed according to the extent to which the allocation to intervention or control was concealed. Because of the potentially important cluster effects, we also rated trials according to whether they checked for or adjusted for these but, in the absence of consensus on how to pool cluster level data, we adopted a narrative approach to synthesizing the data, rather than a formal meta-analysis.
Main results

We identified two trials which met our selection criteria. They included a total of 976 smokers. Both trials were set in the UK and involved a training intervention which included the Stages of Change Model; they then compared a support programme involving counselling and record keeping against a control receiving usual pharmacy support. In both studies a high proportion of intervention and control participants began using NRT.

Both studies reported smoking cessation outcomes at three time points. However, the follow-up points were not identical (three, six and 12 months in one, and one, four and nine months in the other), and the trend in abstinence over time was not linear in either study, so the data could not be combined. One study showed a significant difference in self-reported cessation rates at 12 months: 14.3% versus 2.7% (p < 0.001); the other study showed a positive trend at each follow-up with 12.0% versus 7.4% (p = 0.09) at nine months.

Authors’ conclusions

The limited number of studies to date suggests that trained community pharmacists, providing a counselling and record keeping support programme for their customers, may have a positive effect on smoking cessation rates. The strength of evidence is limited because only one of the trials showed a statistically significant effect.

Plain language summary

Trained community pharmacy personnel may be able to help people who wish to stop smoking

Personnel in community pharmacies (drug stores) can be a source of information and support for people trying to quit smoking. They may have a role because nicotine replacement therapy, an effective cessation pharmacotherapy, is available without prescription in many countries. People also come to pharmacies with prescriptions for medications to help them quit. The review included two trials and found limited evidence that training pharmacy personnel to offer counselling and record keeping services to their customers may help smokers to quit.

Background

The community pharmacist is one of the only health care professionals who has regular interactions with large numbers of people 'in health' as well as 'in sickness' (HEA 1994). This should provide an excellent opportunity for pharmacists to contribute to health promotion and disease prevention activities in collaboration with other healthcare providers. All of the commercially available forms of nicotine replacement therapy (NRT) are effective in promoting smoking cessation, increasing quit rates 1.5- to 2-fold regardless of setting (Silagy 2004). Smoking cessation is a particularly appropriate role for the community pharmacist because NRT is available without prescription in many countries, although not necessarily in all of its many formulations (nicotine chewing gum, transdermal patches, nasal spray, inhalators, sublingual tablets and lozenges). Bupropion is also available to patients as a prescription only medicine and therefore largely supplied through pharmacies.

In the United Kingdom (UK), pharmacists are encouraged to advise on the correct use of NRT products (Royal Pharmaceutical Society, RPS 1999) and to provide a structured package of behavioural support to aid smoking cessation (West 2000). However, pharmacists have identified a number of barriers that can inhibit them from participating in smoking cessation activities, including dispensing duties (Anderson 2003), lack of counselling skills (Vitale 2000), pharmacist interpersonal characteristics, practice site considerations, patient characteristics and financial concerns (Williams 2000).

Training health professionals in smoking cessation counselling has a measurable effect on professional performance, but there is no strong evidence that it changed clients' smoking behaviour (Lancaster 2000; Hudmon 2004). However, an understanding of the trans-theoretical model could improve the effectiveness of counselling in the pharmacy setting (Vitale 2000; Hudmon 2001). Although smoking cessation training for pharmacy students has been shown to increase perceived confidence and ability to provide counselling (Corelli 2005, Hudmon 2004), the lack of curriculum time and lack of experiential training opportunities is still a
problem for some pharmacy schools to cover this topic adequately (Hudmon 2005).

Evidence supports the wider provision of smoking cessation through community pharmacies (Blenkinsopp 2003). It has been shown that pharmacists can play a role in offering counselling to smokers (Wick 2000; Babar 2007), that health promotion advice on smoking cessation from trained community pharmacists is valued by their customers (Gschwend 1999; Blenkinsopp 2002; Hudmon 2003), that community pharmacists who counsel patients can improve smoking cessation rates (Smith 1995; Barbero 2000), that a pharmacist-based smoking cessation programme can improve the health-related quality of life of patients during their cessation attempt (Zillich 2002) and that pharmacy interventions can be cost-effective (McGhan 1996; Crealey 1998; Sinclair 1999b; Tran 2002).

Although the above literature indicates that pharmacists have a useful role to play in smoking cessation, many of the studies cited do not meet the strict criteria required for definitive statements. The aim of this review was therefore to identify the most rigorous studies which could allow us to say with confidence whether or not community pharmacists have a role to play in assisting their clients to stop smoking.

OBJECTIVES

This review assessed the effectiveness of interventions by community pharmacy personnel to assist clients to stop smoking.

METHODS

Criteria for considering studies for this review

Types of studies
Randomized controlled trials.

Types of participants
Community pharmacy clients who are smokers and who wish to stop.

Types of interventions
Any intervention by community pharmacy personnel to promote smoking cessation amongst their clients. The intervention may have been delivered by one or more pharmacists and/or members of pharmacy staff. They may have included advice or more intensive behavioural therapy, with or without the use of any form of NRT or other pharmacotherapy. The control intervention may have been usual pharmacy support or any less intensive programme. Pharmaceutical trials which compared only NRT with a control in the community pharmacy setting did not fall within the scope of this review.

Types of outcome measures
The primary outcome measure of the review was rates of abstinence from smoking six months or more after the start of the intervention. We excluded studies with shorter follow-up. Participants lost to follow-up were regarded as being continuing smokers.

Search methods for identification of studies
We searched the Cochrane Tobacco Addiction Group trials register for smoking cessation studies conducted in the community pharmacy setting, using the search terms pharmacist* or pharmacy or pharmacies in the title, abstract or keywords. The register includes controlled trials of interventions for smoking cessation identified from searches of electronic databases including MEDLINE, SCISEARCH and PsycINFO, and hand-searching of conference abstracts. We also searched EMBASE using the terms ((pharmacist* or pharmacy* or pharmacies) in TI or SU) and (smoking cessation). Date of the most recent search: October 2007.

Data collection and analysis

Data extraction
Studies generated by the search strategy were reviewed by the two authors, according to the inclusion criteria. Data were extracted by one author (HS) and checked by a second (CB). The following information was noted:

- Country of the trial
- Details of participant community pharmacies: type of pharmacy practice; context under study
- Method of subject recruitment to the study
- Smoking behaviour and characteristics of participants on recruitment: whether current smokers or recent quitters; whether selected according to willingness to make a quit attempt; age, sex, and average baseline cigarette consumption
- Other relevant inclusion/exclusion criteria for the trial
- Method of randomization
- Description of the intervention
- Description of any pharmacy personnel training
- Outcome measures: definition of smoking abstinence at the longest follow-up; use of biochemical validation
- Reasons for the non-inclusion of the studies

Methodological quality
We assessed the methodological quality of the included studies by the extent to which the allocation to intervention or control was...
follow-up points in the Maguire study were at three, six and 12 months, while the Sinclair study followed up at one, four and nine months. In both studies, the smoking cessation outcome at final follow-up was continuous abstinence. In both studies, follow-up was by postal questionnaire and depended on self-reported smoking status. This was validated by cotinine in one study (Maguire 2001).

One study (Maguire 2001) paid pharmacists £15 for each smoker enrolled and followed up for 12 months.

Both studies used qualitative methods to evaluate the intervention process. Maguire 2001 conducted telephone interviews and focus groups with participating pharmacists. The other study used telephone interviews with customers, pharmacists and pharmacy assistants (Sinclair 1997; Sinclair 1998). Sinclair also developed a postal questionnaire to compare the knowledge and attitudes of the intervention and control pharmacists and pharmacy assistants at two, 12, 24 and 36 months after the training workshop (Sinclair 1999a).

Risk of bias in included studies

Neither trial was considered to have used an approach which ensured adequate concealment of allocation. Although Maguire 2001 used sealed envelopes, the process remains unclear because of the disparity between the numbers in the control and intervention groups (controls markedly fewer). The Sinclair trial was cluster randomized, with the pharmacy as the unit of randomization, and pharmacies sequentially allocated to the training intervention or to no training (Sinclair 1998). In Maguire 2001 randomization was by participant. In Sinclair 1998 the unit of randomization was the pharmacy, so it could not be assumed that the individuals included in the analysis were independent of each other (a reasonable assumption had the randomization been by participant).

However, the degree of intra-cluster randomization was shown to be negligible, so that the randomization by pharmacy had no effect on the variance of the regression coefficients and the results could therefore be treated as if randomization were by participant. Nevertheless we decided against pooling the data from the two studies, because the trend in abstinence over time was not linear in either study and the follow-up time points were not identical. Since however it is usual for Cochrane reviews on tobacco addiction to attempt to pool clinically similar trials, ignoring small differences in length of follow-up, we also considered whether pooling would alter our findings.

Cotinine validation of self-reported cessation at 12 months was reported in one study (Maguire 2001). No biochemical validation was carried out in the other study (Sinclair 1998).

Effects of interventions

Community pharmacy personnel interventions for smoking cessation (Review)

Description of studies

We identified two randomized controlled trials, both conducted in the UK, which investigated the issue of community pharmacy support for smoking cessation (Sinclair 1998; Maguire 2001). The studies included a total of 976 smokers with similar numbers in each, and 51 pharmacies in one study (Maguire 2001) and 60 in the other (Sinclair 1998). Both studies involved training interventions which included the Stages of Change Model: a three-hour workshop for pharmacists plus one outreach visit (Maguire 2001), and a two-hour workshop for pharmacists and pharmacy assistants (Sinclair 1998). The Maguire study used the Pharmacists’ Action on Smoking (PAS) scheme which has been reported elsewhere (Maguire 1999; Maguire 1996; Maguire 1997). Both studies compared a support programme of counselling and record keeping with a control group who received a normal service from pharmacy personnel. Maguire 2001 randomized by customer, using a sealed envelope technique (Altman 1982), while Sinclair 1998 used a cluster design with the pharmacy as the unit of randomization. The Maguire study recruited customers who expressed a wish to stop smoking (265 intervention, 219 controls); a similar proportion in each arm started to use NRT (87% intervention, 84% controls). The Sinclair study recruited pharmacy customers seeking advice on stopping smoking or buying an over-the-counter (OTC) anti-smoking product at the start of a new attempt to stop smoking (224 intervention, 268 controls); a similar proportion in each arm started to use NRT (98% intervention, 93% controls).
In both studies, we assumed that non-responders were continuing smokers.

In **Maguire 2001**, three months’ continuous abstinence was claimed by 27.5% of the intervention group and by 11.0% of the controls; six months’ continuous abstinence was claimed by 18.5% of the intervention group and by 8.2% of the controls; and cotinine-validated continuous abstinence was claimed at 12 months by 14.3% of the intervention group and by 2.7% of the controls (p < 0.001). The 12 month cessation rates were robust to potential confounders (type or size of pharmacy, and gender or age of the pharmacist involved in the study).

In **Sinclair 1998**, one month point prevalence abstinence was claimed by 29.9% of the intervention group and by 23.6% of the controls (p = 0.12); four months’ continuous abstinence was claimed by 16.1% of the intervention group and by 10.9% of the controls (p = 0.094); and nine months’ continuous abstinence was claimed by 12.0% of the intervention group and by 7.4% of the controls (p = 0.089). These trends in outcome were robust to potential confounders (gender, age, socio-economic status, nicotine dependency at recruitment and type of NRT product used), and to adjustment for clustering.

In **Riemsma 2003**, both the pharmacy studies found that pharmacists valued the training and felt that an understanding of the Stages of Change was a good learning experience and a good use of their time. The outcomes for each trial are displayed graphically as risk ratios with 95% confidence intervals. We also considered the effect of pooling the results. There was significant heterogeneity (I^2 = 81%), so a fixed effects model for pooling was not appropriate. Using a random effects model the pooled effect was not statistically significant (risk ratio 2.79, 95% CI 0.87 - 9.01).

**DISCUSSION**

The limited number of studies to date supports the possibility that trained community pharmacists, providing a support programme of counselling and record keeping for their customers, has a positive effect on smoking cessation rates (Sinclair 1998; Maguire 2001). A limitation to the strength of this conclusion is that the two studies had somewhat different effects. Maguire 2001 showed a large and statistically significant benefit, but the quit rate in the control group at 12 months was relatively low at only 2.7%, even though 84% began by using NRT. In contrast Sinclair 1998 did not show a statistically significant effect at any follow-up, although there was a consistent trend towards benefit from the intervention at all follow-up points.

Since many reviews of tobacco addiction do perform meta-analysis to combine the results of clinically similar trials, we considered whether pooling the data would have changed our conclusions. As expected there was significant statistical heterogeneity between the results of the two studies. Pooling using a fixed effects model was therefore inappropriate. Using a random effects model, the confidence interval around the estimate was very wide, and included 1. That is, no evidence was detected of a significant benefit. This supports the cautious conclusions of the review.

Although only limited evidence exists for the effectiveness of stage-based interventions in changing smoking behaviour (Riemsma 2003), both the pharmacy studies found that pharmacists valued the training and felt that an understanding of the Stages of Change model helped them to counsel their customers (Sinclair 1997; Maguire 2001). The training intervention had long-term benefits for the knowledge and attitudes of pharmacists and their staff over a three-year period (Sinclair 1999a) and was also associated with participants reporting increased and more highly rated counselling (Sinclair 1998). Pharmacy staff working on their own can make a positive contribution to the process and outcome of smoking cessation (Sinclair 1998; Maguire 2001), and other healthcare professionals can also make positive contributions to the smoking cessation process (Rice 2004; Lancaster 2004). However, much more could be achieved through a co-ordinated approach to interventions that use all members of the healthcare team (Lichtenstein 1996). Pharmacists have highlighted the importance of a multi-
A recent survey of UK community pharmacists reported that 44% of responding pharmacists had been commissioned by their local primary care organisation to provide smoking cessation services (Inch 2007). There is also scope for interventions across secondary and primary care as demonstrated by an Australian smoking cessation programme involving counselling and nicotine patches, initiated in hospital and then continued by hospital- or community-based pharmacists, which was superior to minimal intervention without nicotine patches (Vial 2002). The main barriers to pharmacists becoming more actively involved in smoking cessation interventions are time constraints and insufficient remuneration (Maguire 2001). These barriers need to be addressed.

**Authors’ Conclusions**

**Implications for practice**

Interventions in which pharmacists were trained to provide a counselling and record keeping support programme for smokers, were associated with increased and more highly rated counselling, and may have a positive effect on smoking cessation rates. This indicates that community pharmacy personnel have the potential to make a significant contribution to smoking cessation targets. However, more might be achieved through a consistent, co-ordinated approach to smoking cessation interventions by a wide range of healthcare professionals across primary and secondary care.

The issues of time constraints and appropriate remuneration for pharmacy staff who provide smoking cessation support for their customers need to be addressed.

**Acknowledgements**

Amanda Lee provided statistical advice.

**References**

**References to studies included in this review**

Maguire 2001 (published data only)


Sinclair 1998 (published data only)


**References to studies excluded from this review**

Anderson 2002 (published data only)


Babar 2007 (published data only)


Baluch 1995 (published data only)

Barnes 2006  

Carroll 2000  

Dent 2004  

Doescher 2002  

Gauen 1995  

Hasford 2003  

Howard-Pitney 1999  

Kennedy 2002  

McEwen 2006  

Mochizuki 2004  

Prokhорова 2006  

Roth 2001  

Sonderskov 1997  

Swartz 1995  

Vial 2002  

Vitale 2000  

Additional references

Altman 1982  

Altman 1997  

Anderson 2003  

Barbero 2000  

Blankensop 2002  

Blankensop 2003  
Corelli 2005

Crealey 1998

Gschwend 1999

HEA 1994

Higgins 2003

Hudmon 2001

Hudmon 2003

Hudmon 2004

Hudmon 2005

Inch 2007

Lancaster 2000

Lancaster 2004
Lancaster T, Stead L. Physician advice for smoking cessation. *Cochrane Database of Systematic Reviews* 2004, Issue 4.[Art. No.: CD000165. DOI: 10.1002/14651858.CD000165.pub3]

Lichtenstein 1996

Maguire 1995

Maguire 1996

Maguire 1997

McGhan 1996

Noyce 2007

Rice 2004
Rice VH, Stead LF. Nursing interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2004, Issue 1.[Art. No.: CD001188. DOI: 10.1002/14651858.CD001188.pub3]

Riemsma 2003

RPS 1999

Silagy 2004

Sinclair 1997

Sinclair 1998b
Sinclair HK, Bond CM, Lennox AS, Silcock J, Winfield AJ. Knowledge of and attitudes to smoking cessation: the effect of stage

**Sinclair 1999a**


**Sinclair 1999b**


**Smith 1995**


**Tran 2002**


**West 2000**


**Wick 2000**


**Williams 2000**


**Zillich 2002**


* Indicates the major publication for the study.
CHARACTERISTICS OF STUDIES

Characteristics of included studies  [ordered by study ID]

Maguire 2001

Recruitment inclusion criteria: smokers expressing a wish to stop smoking, >18 years, not pregnant, no minimum cigarettes/day.  
Recruitment period 14 months. Recruitment limited to 12 per pharmacy.  
Randomization: by customer; using sealed envelope technique |
|----------|
| Participants | 100 pharmacists in Northern Ireland and 24 in London: 51 pharmacies enrolled eligible subjects.  
484 smokers (265 intervention [60% male, age: 17-69, mean 42; 74% smoked 10-20 cigarettes/day, 87% started to use NRT]; 219 control [56% male, age: 25-72, mean 38; 55% smoked 10-20 cigarettes/day, 84% started to use NRT] |
| Interventions | Three-hour training workshop for pharmacists plus one support visit to each pharmacist. The workshop covered epidemiology, smoking statistics, NRT use, cycle of change model and Pharmacists' Action on Smoking (PAS) model. The PAS intervention involved structured counselling programme, information leaflet and record keeping. They were required to attend a weekly follow-up for the first 4 weeks then monthly for 3 months as needed |
| Outcomes | Self-reported continuous abstinence at 3, 6 and 12 months.  
Validation: cotinine at 12 months on subjects reporting 12 months of abstinence (n=44) |
| Notes | Pharmacists paid £15 per smoker enrolled and followed up for 12 months. No recruit attended for counselling after 4 weeks |

Risk of bias

<table>
<thead>
<tr>
<th>Item</th>
<th>Authors' judgement</th>
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<tbody>
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<td>Allocation concealment?</td>
<td>Unclear</td>
<td>B - Unclear</td>
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</table>

Sinclair 1998

| Methods | Setting: rural community pharmacies, Grampian, Scotland.  
Recruitment inclusion criteria: pharmacy customers seeking advice on stopping smoking or buying an OTC anti-smoking product in preparation for a new attempt to stop smoking. Recruitment period 12 months. No limit to number of recruits per pharmacy.  
Randomization: by pharmacy; stratified by type (national multiple, or proprietor-owned), ranked by pharmacist's motivation (date of joining study), then sequential allocation to training or no training |
<table>
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<tr>
<td>Participants</td>
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Sinclair 1998  (Continued)

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</tr>
<tr>
<td>Baluch 1995</td>
<td>No control group</td>
</tr>
<tr>
<td>Barnes 2006</td>
<td>No control group. All participants received pharmacist support and St John's Eprt.</td>
</tr>
<tr>
<td>Carroll 2000</td>
<td>No control group</td>
</tr>
<tr>
<td>Dent 2004</td>
<td>No control group</td>
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<tr>
<td>Doescher 2002</td>
<td>No control group</td>
</tr>
<tr>
<td>Gauen 1995</td>
<td>No control group</td>
</tr>
<tr>
<td>Hasford 2003</td>
<td>No control group (Evaluated over-the-counter nicotine patch)</td>
</tr>
<tr>
<td>Howard-Pitney 1999</td>
<td>Randomized to receive NRT or placebo; both groups received same behavioural treatment.</td>
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<tr>
<td>Study</td>
<td>Description</td>
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<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Kennedy 2002</td>
<td>No control group</td>
</tr>
<tr>
<td>McEwen 2006</td>
<td>Non randomised study with four week follow-up. Some individual counselling participants were treated by pharmacists</td>
</tr>
<tr>
<td>Mochizuki 2004</td>
<td>Randomised study with only 3 months follow-up. (Pilot study, 28 participants)</td>
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<tr>
<td>Prokhorov 2006</td>
<td>Study of pharmacist &amp; physician training with 3 month follow-up, smoking cessation outcomes not reported in abstract</td>
</tr>
<tr>
<td>Roth 2001</td>
<td>No control group</td>
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<tr>
<td>Sonderskov 1997</td>
<td>NRT versus placebo, no other intervention.</td>
</tr>
<tr>
<td>Swartz 1995</td>
<td>No control group</td>
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<tr>
<td>Vial 2002</td>
<td>Participants did not meet the criteria for consideration in this review i.e. were not community pharmacy clients who were smokers wishing to stop. Participants recruited in a hospital setting and randomized to one of three arms of the study. Support programme of counselling and nicotine patches initiated in hospital with the first consultation with a research pharmacist common to two groups then continued by hospital- or community pharmacy-based pharmacists compared with minimal intervention without nicotine patches</td>
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<td>Vitale 2000</td>
<td>Descriptive paper, no control group</td>
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DATA AND ANALYSES

Comparison 1. Intervention versus control

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<td>Risk Ratio (M-H, Fixed, 95% CI)</td>
<td>Totals not selected</td>
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Analysis 1.1. Comparison 1 Intervention versus control, Outcome 1 Cessation at longest follow-up.

Review: Community pharmacy personnel interventions for smoking cessation

Comparison: 1 Intervention versus control

Outcome: 1 Cessation at longest follow-up

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<th>Risk Ratio M-H,Fixed(95% CI)</th>
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<td>Maguire 2001</td>
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<td>6/219</td>
<td>5.23 [ 2.25, 12.15 ]</td>
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<td>Sinclair 1998</td>
<td>26/217</td>
<td>19/257</td>
<td>1.62 [ 0.92, 2.85 ]</td>
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WHAT’S NEW

Last assessed as up-to-date: 30 October 2007.

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HISTORY

Review first published: Issue 1, 2004

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<td>New search has been performed</td>
<td>Search update for Issue 1, 2008. No new studies included. New references added to the Excluded studies and Background.</td>
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CONTRIBUTIONS OF AUTHORS

KH and CM extracted data and wrote the review; LS searched for trials, and edited final version of the review. All authors contributed to a minor update of the review for issue 1, 2008.

DECLARATIONS OF INTEREST

HK Sinclair and CM Bond were the principal investigators in one of the studies included in this review.

SOURCES OF SUPPORT

Internal sources
- University of Aberdeen, UK.
- Department of Primary Health Care, University of Oxford, UK.

External sources
- NHS Research & Development Programme, UK.

INDEX TERMS

Medical Subject Headings (MeSH)
*Pharmacies; *Pharmacists; *Smoking Cessation; Counseling; Health Promotion; Randomized Controlled Trials as Topic
MeSH check words

Humans